

Claims

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. A thin film transistor comprising:

3 a gate electrode disposed on a predetermined  
4 substrate and formed in a predetermined pattern;

6 a semiconductor layer formed correspondingly to  
7 patterning of said gate electrode;

9 a pixel electrode interposed by said  
10 semiconductor layer; and

12 a signal electrode interposed by said  
13 semiconductor layer and disposed at a predetermined  
14 interval from said pixel electrode,

16 wherein said signal electrode is disposed at  
17 such a position where said signal electrode prevents  
18 crosstalk running from an adjacent signal electrode, via  
19 said semiconductor layer, to said pixel electrode.

2. The thin film transistor according to Claim 1,  
3 wherein said semiconductor layer is formed in an almost  
4 equivalent pattern to said patterning of said gate  
electrode.

6 3. The thin film transistor according to Claim 1,  
7 wherein:

1           said gate electrode is provided on said  
2       substrate; and

3  
4           said semiconductor layer is formed on said gate  
5       electrode through a gate insulating film and patterned  
6       correspondingly to said patterning of said gate  
7       electrode.

1  
2       4. The thin film transistor according to Claim 1,  
3       wherein said semiconductor layer is formed on a layer  
4       lower than a gate insulating film formed on said lower  
5       layer of said gate electrode.

6       5. A thin film transistor comprising:

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8           a source electrode provided on a predetermined  
9       insulating substrate;

10  
11          a drain electrode disposed by keeping a  
12       predetermined interval from said source electrode;

13  
14          a semiconductor layer disposed so as to contact  
15       said source electrode and said drain electrode and  
16       connect said both electrodes each other;

17  
18          a gate insulating film for covering said  
19       semiconductor layer; and

20  
21          a gate electrode disposed adjacently to said  
22       gate insulating film; wherein said gate electrode is  
23       patterned by being provided with a protruded portion  
24       almost orthogonal to said source electrode and said drain

25       electrode and said semiconductor layer and said gate  
26       insulating film are pattern-formed in accordance with  
27       said patterning of said gate electrode; and  
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29                said drain electrode is disposed nearby said  
30       root of said protruded portion on said gate electrode to  
31       said source electrode.

1       6. The thin film transistor according to Claim 5,  
2       wherein said semiconductor layer and said gate insulating  
3       film are formed in said same patterning process as said  
4       gate electrode.

1       7. The thin film transistor according to Claim 5,  
2       wherein said source electrode and said drain electrode  
3       are arranged in parallel with each other at a  
4       predetermined line width.

1       8. A liquid-crystal display panel having a pixel  
2       electrode and a thin-film-transistor-channel structure  
3       for applying a voltage to said pixel electrode,  
4       comprising:

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6                a gate line for forming a gate electrode in  
7       said thin-film-transistor-channel structure; and  
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9  
10              a signal line connected to a signal electrode  
11       in said thin-film-transistor-channel structure; and  
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13              a semiconductor layer to be patterned under a  
14       state along said gate line by exceeding said thin-film-  
transistor-channel structure; wherein

15           said signal electrode is configured so as to  
16        prevent said current incoming through said semiconductor  
17        layer from an adjacent signal line for applying a voltage  
18        to a pixel electrode adjacent to said former pixel  
19        electrode.

1       9. The liquid-crystal display panel according to Claim  
2       8, wherein said semiconductor layer remains on said gate  
3       line and has a parasitic thin film transistor between  
4       said adjacent signal line and said thin-film-transistor-  
5       channel structure.

1       10. The liquid-crystal display panel according to Claim  
2       8, wherein said gate electrode is formed on a substrate  
3       and said semiconductor layer is formed on a layer upper  
4       than said gate insulating film formed on said upper layer  
5       of said gate electrode.

1       11. The liquid-crystal display panel according to Claim  
2       8, wherein said semiconductor layer is formed on a layer  
3       lower than said gate insulating film formed on said lower  
4       layer of said gate electrode.

1       12. A thin film-transistor manufacturing method  
2       comprising:

4           an opaque film step of forming an opaque film  
5       having a predetermined shape on a substrate;

7           an insulating film step of forming an  
8       insulating film on said substrate so as to cover said  
9       opaque film;

10                   a source-and-drain-electrode forming step of  
11                  forming a source electrode and a drain electrode which  
12                  are made of metallic films having a predetermined line  
13                  width and keeping a predetermined interval from each  
14                  other on said formed insulating film;

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16                   a semiconductor-insulating-film-layer step of  
17                  forming a semiconductor layer and a gate insulating film  
18                  layer on said insulating film in order above said source  
19                  electrode and said drain electrode;

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21                   a gate-electrode forming step of forming a  
22                  metallic film for a gate electrode on said gate  
23                  insulating film layer;

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25                   a pattern forming step of patterning said  
26                  semiconductor layer, said gate insulating film layer, and  
27                  said metallic film for a gate electrode and forming a  
28                  protruded TFT portion having a thin-film-transistor-  
29                  channel structure and in which said semiconductor layer  
30                  and said gate insulating film layer are formed at said  
31                  position of said gate electrode exceeding said protruded  
32                  TFT portion; wherein

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34                   said source-and-drain-electrode forming step  
35                  forms at least either of a source electrode and a drain  
36                  electrode serving as a signal electrode so as to cross  
37                  said protruded TFT portion formed in said pattern forming  
38                  step.

1                   13. The thin-film-transistor manufacturing method  
2                  according to Claim 12, wherein said pattern forming step

1 pattern-forms said semiconductor layer, said gate  
2 insulating film layer, and said metallic film for a gate  
3 electrode in said same patterning step.

1 14. The thin-film-transistor manufacturing method  
2 according to Claim 12, wherein said pattern forming step  
3 pattern-forms said semiconductor layer, said gate  
4 insulating film layer, and said metallic film for a gate  
5 electrode into almost said same shape.